

POLAND / Organic Chemistry. Synthetic Organic
Chemistry.

G-2

Abs Jour: Ref Zhur-Khimiya, No 23, 1958, 77747.

Abstract: $\text{C}_5\text{H}_4\text{NCH}(\text{CH}_3)\text{PO}(\text{OC}_2\text{H}_5)_2$ (II), mp 141-143°,
which differs from the isomeric picrate of I
($\text{R} = \text{P}(\text{O})(\text{OC}_2\text{H}_5)_2$); II has a bp of 95-97°/0.05mm,
 n^{25}_{D} 1.4920. I ($\text{R} = \text{P}(\text{O})(\text{OH})_2$) and I ($\text{R} = \text{C}_5\text{H}_4\text{NCH}(\text{CH}_3)\text{P}(\text{O})(\text{OH})_2$) form salts with $\text{C}_6\text{H}_5\text{CH}_2\text{NH}_2$
having mp's of 179-180 and 171°, respectively.
-- V. Gilyarov.

Card 3/3

Distr: 4E2c(j)/4E3d

Organophosphorus compounds of sulfur and selenium.
Addition of alkylphosphorylsulfenyl chlorides and alkyl-
alkyphosphorylsulfenyl chlorides to symmetrical olefins.
J. Michalski, B. Borecka, and S. Musierowicz (Politech.
Wroc., Pol.) Bull. acad. polon. sci., Ser. sci. Chim., geo.
et geograph. 6, 150-63 (1958) (in English).—The addn. of
organophosphorus compds. with a P(OSCl) group (cf.
C.A. 52, 9945k) to sym. olefins has been studied. By addn.
of (RO)₂P(O)SCI (I) or R'(RO)P(O)SCI (II) to C₂H₄ (III),
Me₂C=CMe (IV), or cyclohexene, the following compds.
P(O)SCH₂CH₂Cl (V), 84, 03°/0.00, 1.4786, 1.2270 (Mor-
ison, C.A. 50, 780k); (EtO)₂P(O)SCMe₂CMe₂Cl, 60,
07°/0.02, 1.4840, 1.1100; (PrO)₂P(O)SCH₂CH₂Cl, 77,
72°/0.005, 1.4781, 1.1657; (PrO)₂P(OSCMe₂)CMe₂Cl, 40,
86°/0.01, 1.4858, 1.0908 at 25°; (iso-PrO)₂P(OSCH₂-
CH₂Cl, 70, 100°/0.9, 1.4090, 1.4202; (BuO)₂P(OSC₂H-
CH₂Cl, 86, 92.5°/0.015, 1.4731, 1.1208; Et(EtO)P(O)-
P(OSCH₂CH₂Cl) (VI), 74, 640°/0.06, 1.4958, 1.1941; Et(BuO)-
(EtO)P(O)SR (R = 2-chlorocyclohexyl), 62, 91°/0.1,
1.4903, 1.1048; PhCHClCHPhSP(O)(EtO)₂ (VII), 68, m.
98-9° (repeatedly from C₂H₄). — E.g.: I (R = Et)
(20.4 g.) dild. with 30 ml. C₂H₄, kept at 5-10°, pure III
introduced until the yellow color disappeared, the soln.
washed with H₂O, satd. NaHCO₃, and H₂O, dried, and the
C₂H₄ evapd., gave V. The synthesis of VI was performed
at 10-20°; that of VII required 3 days' exposure to light.

J. Stecki

6
2-MAY
2

MICHALSKI, J.

Organophosphorus compounds of sulfur and selenium.
IX. Action of dialkylarylpolyphosphorylbenzyl chlorides and alkylalkylphosphorylbenzyl chlorides to symmetrical selenides. Barbara Lenard-Borecka, Jan Michalski, and Stanislaw Baniewicz (Polish Acad. Sci., Z. Chem., Warsaw, 32, 1801-9 (1958) (English Summary); cf. C.A. 51, 10034, 18966.—Dialkylphosphorylbenzyl chlorides, $(RO)_2P(O)SCl$ (I), and alkylalkylphosphorylbenzyl chlorides, $R(RO)P(O)SCl$ (II), add spontaneously and exothermally to C_6H_6 (III), $(Me_2C)_2$, and cyclohexene. The reaction with stilbene requires irradiation by sunlight. E.g. 20.4 g. $(EtO)_2P(O)SCl$ in 20 ml. C_6H_6 with III (gas) at 5–10° gave, after distn., 19.7 g. (84.8%) $(EtO)_2P(O)SClCH_2-$ CH_2Cl ($R = Et$) (IV), b.p. 68°, n_D²⁵ 1.4785, d₄ 1.2276. The following analogs of IV were prep'd. (R , b.p./mm., n_D²⁵, d₄, % yield): Pr, 72°/0.005, 1.4751, 1.1657, 77; iso-Pr, 100°/0.9, 1.4690, 1.1482, 66; Bu, 95.2°/0.01, 1.4731, 1.1206, 66. The following were also prep'd.: $E((EtO)P(O)-$ $SCH_2CH_2Cl)$, 64°/0.06, 1.4858, 1.1041, 74; $(EtO)_2P-$ $(O)SCMe_2CMsCl$, 67°/0.02, 1.4840, 1.1106, 60; $Bt-$ $(BuO)_2P(O)NCH_2CH_2Cl$, 80°/0.06, n_D²⁵ 1.4885, d₄ 1.1333, 78; $(TOMe)_2P(O)SCMe_2CMsCl$, 80°/0.01, n_D²⁵ 1.4858, d₄ 1.0906, 60; $(EtO)_2P(O)SC_6H_5Cl$, 91°/0.1, 1.4963, d₄ 1.1948, 62; $(EtO)_2P(O)SCH_2PhCl$, m. 98–9°, yield 58%. The structure of IV was verified by synthesis by Morrison's method (C.A. 50, 7835), and by oxidative chlorination according to Kipping (C.A. 52, 16556g). The compds. inhibit cholinesterase activity and do not possess any blistering property.

Stanislaw Baniewicz

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4E 3d
Z may
4E 2c jj
1-RDW

MICHALSKI, J.

7 2 May
4E2e b/p
4E3 d
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APPROVED FOR RELEASE: 03/13/2001

CIA-RDP86-00513R001033810019-5"

MICHALSKI, J.

Optically active *P*-ethoxy-*O*-ethylphosphoranesulfenyl chlorides. I. Michalski and A. Ratajczak (Tech. Univ., Zabrze, Poland). Chem. & Ind. 1959, 838-40. Optical activity for unsym. substituted P was established by prep. of the optically active isomers of *P*-ethoxy-*P*-ethyloxophosphoranesulfenyl chloride (I). *O*-Ethyl-*P*-ethyloxophosphoric acid was resolved by quinine to the (+)-acid, b.p. 89-90°, n_D²⁰ 1.488, α +14.5° (neat, 1 dm.), and the (-)-acid, b.p. 95-6°, n_D²⁰ 1.4902, α -14.8°. These and sulfonyl chloride gave the active forms of I, the intense color of which precluded detn. of optical activity. However, (+)-I and C₆H₆ gave (+)-*O*-ethyl-S-(2-chloroethyl)-*P*-ethylphosphonothionate, b.p. 84-6°, n_D²⁰ 1.4921, α +43.3°, while (-)-I gave the corresponding (-)-ester, b.p. 84-6°, n_D²⁰ 1.4922, α -42.6°. Olden E. E. [Handwritten note: 2-Jayf (NB) (May)]

MILMIKSI, J.; HEMICKI, J.

Cyanophosphorus compounds of sulfur and selenium. VIII. Action of cyanides and selenocyanates on full esters of tervalent phosphorus acids; synthesis of 1, , S-trialkyl thiophosphates, C, C, Se-trialkyl selenophosphates and their analogues. p. 105.

ROZMIAKI GRZELA. (Polska Akademia Nauk, Warszawa, Poland). Pol. B, no. 1, 1970.

Monthly List of East European Acquisitions (EAST E), Vol. 1, no. 1, February 1970. Incl.

Reactions of organic disulfides with dialkyl phosphites, dialkyl thiophosphites and sodium derivatives. A new synthesis of O,O,S -trialkyl thiophosphates, O,O,S -trialkyl dithiophosphates and O,S -dialkyl hydrogen phosphorothiolates. Jan Michałski, Jan Wleczorkowski, Jan Wasik, and Bozena Piszka (Technika, Łódź, Poland). Roczniki Chem. 33, 247-80 (1959) (in English).—The reactions between acyl disulfides (I) and dialkyl phosphites (II), dialkyl thiophosphites (III), or their Na derivs. (IV) and (V), resp., have been studied (b.p./mm. and % given for the compds. below). II react spontaneously only with I to give $(RO)_2P(SOP(OX)OR)_2$ (R = Et), 78-80%/0.03, 1.4453, and $(RO)_2PSOH$ (R = Et), 62-3%/0.03, 1.4644, in 70% yield. IV react with I in C_6H_6 at 20° as well as with diaryl or dialkyl disulfides (VI), R'SSR', to yield $(RO)_2P(OSR')^2$ (R = Et, R' = Bu; 135-6%/12, 1.4587; (R = Et, R' = Ph), 115-16%/0.6, 1.5248; and R'SNa. An analogous reaction takes place between V and VI giving 64% O,O -diethyl S-butyl dithiophosphate, 146%/12, 1.4901. An ionic mechanism is suggested for this reaction. The reaction between IV and VI in boiling C_6H_6 led to secondary dealkylation due to nucleophilic attack of an anion contg. S, which gave $R'SP(OX)ORONa$ (VII) and $R'SR$. VII are characterized as cyclohexyramine salts: R = Et, R' = Bu, m. 125-6%; R = Et, R' = Ph, m. 130-1%. The yields of VII were 60-70%.

A. Kreglewski

MICHALSKI, JAN

Organophosphorus compounds of sulfur and tellurium.
XI. A simplified procedure for synthesis of dialkyltellurophosphonate chlorides, $(RO)_2PO(O)SCl$.
M. Kruglewski (Poznan Institute, Poznan, Poland). Roczniki Chem. 53, 105-6 (1979) (Engl. summary); cf. C.A. 88, 100124.—
A simplified procedure for prep. of dialkyltellurophosphonate chlorides, $(RO)_2PO(O)SCl$ (I) is described. A given dialkylphosphite (3 moles) in C_6H_6 soln. is treated with 1 mole of $SeCl_4$ at -5 to 0° . The product (without being isolated) is chlorinated with 1 mole of SO_2Cl_2 , keeping the same temp. After removal of the solvent and volatile products by evapn. *in vacuo* at room temp., I is purified by distn. *in vacuo*. I ($R = Et$), b_{14} $61-2^\circ$, n_D^{20} 1.6673, 60% yield, was obtained.

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4E3d
4E2a
4E2b
OPA

GODLEWSKA-ZWIERZAK, Krystyna; MICHALSKI, Jan; STUDNIARSKI, Kazimierz

Alkyl and alkenyl pyridines. V. Some new aerivatives of barbituric acid with pyridylethyl side chain. Rocznik chemii 33 no.4/5:1215-1217 '59. (EBAI 9:9)

1. Katedra Chemii Organicznej Politechniki, Lodz.
(Pyridine) (Barbituric acid) (Urea) (Alkenyl groups)
(Alkyl groups) (Sodium ethoxide)
(Pyridylethylmalonate)

MICHALSKI, Jan; MARKOWSKA, Anna; STRZELECKA, Helena

Reaction of dialkoxoxyphosphoranesulfenyl chlorides with amines.
Rocznik chemii 33 no.4/5:1251-1253 '59. (EEAI 9:9)

1. Katedra Chemii Organicznej Politechniki, Lodz.
(Amines) (Alkoxy groups) (Phosphorane)
(Sulfenyl chlorides)

MICHALSKI, Jan; BORECKA, Barbara; KAPECKA, Teresa; STRZELECKA, Helena

Reaction of dialkoxyoxophosphoranesulfenyl chlorides with organic
thiols. Rocznik chemii 33 no.4/5:1255-1257 '59. (EEAI 9:9)

1. Katedra Chemii Organicznej Politechniki, Lodz i Zaklad Syntezy
Organicznej Polskiej Akademii Nauk, Lodz.
(Alkoxy groups) (Thiols) (Phosphorane)
(Sulfenyl chlorides)

MICHALSKY, J.

The red nitriles. I. α -(ρ -Dimethylaminophenyl)imino- β -oxo- γ -(3,4,5-trimethoxyphenyl)alkane nitriles were prep'd. via the method of Kondo (C.A. 43, 2746g), followed by hydrolysis to the corresponding 3,4,5-trimethoxyphenylalkane carboxylic acids. α -(ρ -dimethylaminophenyl)chloride, prep'd. from 50 g. 3,4,5-trimethoxybenzoic acid in the usual manner, was added slowly to an Et₂O soln. of CH₃N, which had been cooled to -10°. After a white, 27 g. cryst. 3,4,5-trimethoxy- α -diaminobenzene sepd. out. This was isolated and converted (via the Wolff rearrangement) to 3,4,5-trimethoxyphenylacetamide. The remaining soln. evap'd. to dryness, washed up in Et₂O, HCl added till N evolution ceased, washed with H₂O, dried over CaCl₂, and reduced in vac. (23.7 g. crude 3,4,5-trimethoxy- α -chloroacetophenone (I), recryst'd. from Et₂O or MeOH as white needles, m. 102-7°. Dry C₆H₅N (30 ml.) poured over 15 g. I, the mixture heated a short time to 60°, and cooled gave 19.7 g. product, m. 102-7°. 3,4,5-trimethoxyphenacylpyridinium chloride (II) (10.7 g., 80% yield) was obtained by treatment of (I) (15.1 g., 89% yield) with 100 ml. H₂O was added after 10 min., III filtered off, washed with C₆H₆, EtOH (3:2) yielded garnet red, monocrystals, m. 184.6°. Red monocrystalline (α -(ρ -dimethylaminophenyl)imino)- β -oxo- β -(3,4,5-trimethoxyphenyl)propionitrile, red monoclinic prisms (vibrating surface, metallic sheen), m. 131-1.5°, yield 85%, was prep'd

from II, ρ -ONC₆H₄NEt₂, and NaCN. Cryst. HCl (5 ml.) was poured over III and the resulting soln. heated 10 min. on a steam bath. The soln. lost its color and III decompd.; 3,4,5-trimethoxyphenylglyoxylic acid sepd. out simultaneously as long, colorless needles, m. 160-1° (H₂O), yield 500 mg. (78.5%); 2,4-dinirophenylhydrazone, orange yellow needles, m. 207.5° (EtOH); 2-hydroxy-3-(3,4,5-trimethoxyphenyl)quinoxaline, white needles, m. 239° (aq. EtOH). Similarly, from 1-diazo-3-(3,4,5-trimethoxyphenyl)-2-propanone, via 1-chloro-3-(3,4,5-trimethoxyphenyl)-2-propanone (white needles, m. 76.5-7.0°), was obtained α -(ρ -dimethylaminophenyl)imino- β -oxo- γ -(3,4,5-trimethoxyphenyl)butyronitrile (IV), violet needles, m. 223.5-4.5°. Acid hydrolysis of IV with dil. HCl in Me₂CO gave β -(3,4,5-trimethoxyphenyl)- α -oxopropionic acid, colorless needles, m. 107-8°. β -(3,4,5-TriMethoxyphenyl)propionamide, obtained from 1-diazo-3-(3,4,5-trimethoxyphenyl)-2-propanone (11 g.) via the Wolff rearrangement, in 100 ml. MeOH boiled 6 hrs. with 10% KOH in 50 ml. H₂O, cooled, acidified with dil. H₂SO₄, ppt'd. Na₂SO₄ sepd., the vol. decreased, neutralized with KOH, and carefully reacidified, yielded cryst. β -(3,4,5-trimethoxyphenyl)propionic acid (V), colorless needles, m. 104° (H₂O). Well dried V (5.4 g.) dissolved in 100 ml. C₆H₆, to which had been added 5 ml. SOCl₂ and several drops dry C₆H₅N, kept 40 hrs. at 15°, heated 3 hrs. at 65°, diazotized to the diazoketone, and then treated with HCl till the N evolution ceased yielded 1-chloro-4-(3,4,5-trimethoxyphenyl)-2-butanone (VI), colorless crystals, m. 74-4.5°. The corresponding pyridinium chloride was prep'd. in the described manner from VI which, by treatment with ρ -ONC₆H₄NEt₂, and NaCN, gave α -(ρ -dimethylaminophenyl)imino- β -oxo- β -(3,4,5-trimethoxyphenyl)propionitrile (VII), orange needles, m. 160-6.5° (C₆H₆-EtOH), yield 81%. VII (500 mg.) heated 10 min. on a steam bath with 150 mg. α -C₆H₅(NH₂)₂ in 20 ml. AcOH and a few drops H₂SO₄, cooled, H₂O added, ppt'd. 2-[2-(3,4,5-trimethoxyphenyl)ethyl]quinoxaline-3-carbonitrile, m. 165-7°.

Stefan Berger

MICHALSKY, J

Distr: 4E3d

Red adducts. II. α -Oxo- γ -(3,4,5-trimethoxyphenyl)butyric acid and α -2 β - γ -(3,4,5-trimethoxy-2,6-dibromophenyl)butyric

acid. J. Michalsky and M. Sauri (Univ. Brno, Czech.). *Mikrochim. Acta*, 75, 205-208 (1969); cf. C.A. 64, 4481f. Cleavage of α -(β -dimethylaminophenylimino)- β -oxo- δ -(3,4,5-trimethoxyphenyl)valeronitrile (I) with dil. HCl leads to α -oxo- γ -(3,4,5-trimethoxyphenyl)butyric acid (II), and not, as previously reported (*loc. cit.*), to 3-hydroxy-4,5,6-trimethoxybenzo-3-carboxylic acid. As proof, α -oxo- γ -(3,4,5-trimethoxy-2,6-dibromophenyl)butyric acid (III) was prep'd. by acid cleavage from α -(β -dimethylaminophenylimino)- β -oxo- δ -(3,4,5-trimethoxy-2,6-dibromophenyl)valeronitrile (IV). IV, with both reactive hydrogens replaced by Br, easily reacted with α -C₆H₅NH₂ and 2,4-(O₂N)₂C₆H₄NH-NH₂, and oxidative decarboxylation with H₂O₂ led to β -(3,4,5-trimethoxy-2,6-dibromophenyl)propionic acid (V) with evolution of CO₂. In the same manner, I led to II which, in neutral H₂O₂ soln., split off CO₂ almost quant. to yield β -(3,4,5-trimethoxyphenyl)propionic acid (VI). E.g., Br (3.5 g.) in glacial 10 ml. AcOH was slowly added to a soin. of 2.4 g. VI, kept 2 hrs. at room temp., the excess Br removed with Na₂SO₃, the mixt. dild. with 250 ml. H₂O, and the pptd. cryst. V recrystd. from EtOH, m. 119-20°, yield 3.3 g. Dry C₆H₆ (30 ml.) and 2.6 ml. SOCl₂ were added to 2.3 g. V, dissolved and heated 3 hrs. at 70°, the oily acid chloride dissolved in 10 ml. C₆H₆ and added slowly, with const. stirring, to an Et₂O soln. of C₆H₅N, cooled to -15°, the whole allowed to stand 20 hrs. at -15°, filtered, HCl (gas) added till N evolution ceased, and kept for a while. After washing with H₂O, and drying over CaCl₂, the product was reduced in vol. to yield, after recrystn. from MeOH, 1-chloro-4-(3,4,5-trimethoxy-2,6-dibromophenyl)-2-butanone (VII), white

needles, m. 107-8°. VII (2 g.) was dissolved in 10 ml. dry C₆H₅N, heated 30 min. to 60-5°, and Et₂O added to ppt. the pyridinium chloride as an oil; this was sepd. and poured, with vigorous stirring, into a soln. of ρ -ONC₆H₄NMe₂ (780 mg. in 8 ml. EtOH) and NaCN (600 mg. in 3 ml. H₂O) at 40° to form a deep red mixt. which yielded 1.7 g. IV, m. 170-2° (C₆H₅-EtOH). IV (400 mg.) was split by heating 30 min. to 40° with a mixt. of 10 ml. Me₂CO and 10 ml. 15% HCl. Me₂CO was evapd., the oily α -ketone extd. 3 times with 20 ml. Et₂O, washed with H₂O, the Et₂O evapd. *in situ*, the oily remainder taken up in Me₂CO, H₂O and a few drops dil. HCl added, and left to stand several days. III pptd. as shiny mother-of-pearl colored leaves; these dried over P₂O₅, m. 63.5-5.5°; 2,4-dinitrophenylhydrazone, yellow needles, m. 195-7°; and 2-hydroxy-3- β -(3,4,5-trimethoxy-2,6-dibromophenyl)[ethyl]quinoxaline, needles, m. 224-5°. III (42.6 mg.) dissolved in 1 ml. 0.1N NaOH, the soln. brought to pH 7, treated with 0.3 ml. 3% H₂O₂, released in 15 min. an almost quant. amt. of CO₂ (measured volumetrically in a gas microburette), acidified and V, m. 120-1°, recrystd. from EtOH. A mixt. of V and β -(3,4,5-trimethoxy-2,6-dibromophenyl)propionic acid showed no mixed m.p. depression. Similarly, II, prisms, m. 130-7°, yield 80%, was obtained by acid cleavage of I; its 2,4-dinitrophenylhydrazone, deep red needles, m. 211-13°. It was decarboxylated with H₂O₂ as above to yield VI, m. 101-2°, identical in m.p. and mixed m.p. with β -(3,4,5-trimethoxyphenyl)propionic acid. Stefan Berger

4
Jag (N/A)

MICHALSKI, T.

Distr: 4E3d/4E2c(j)

¹ Reaction of dialkoxophosphoranesulfenyl chlorides with enol ethers and esters. J. Michalski and W. Muzerowski (Tech. Univ., Lodz, Poland). *Chem. & Ind. (London)* 1959, 505. Reactions of dialkoxophosphoranesulfenyl chlorides with enol ethers and esters are shown to give ethers or esters of α -chloroalcohols. $(EtO)_2PO(SCl)$ (I) is treated with CH_3CHOEt in C_6H_6 below 5° to yield $(EtO)_2PO(SCH_2CH(OH)Cl)$ (II) (85%), which with water gives $(EtO)_2PO(SCH_2CHO)$ (III) (60%), $b_{18} = 82^\circ$, $n_D^20 = 1.4708$ (semicarbazone m. 180°). Treatment of II with excess EtOH gives $(EtO)_2PO(SCH_2CH(OEt))$ (IV) (75%), $b_{18} = 80^\circ$, $n_D^20 = 1.4831$, degraded by alkali to mercaptoacetaldehyde diethyl acetal, b.p. 72-3°, $n_D^20 = 1.4400$ (m.p. and mixed m.p. of 2,4-dinitrophenyl thioether 50°) (Parham, *et al.*, *C.A.* 48, 4548d; Hesse and Jorder, *C.A.* 47, 9975h). Acid hydrolysis of IV yields III (60%). Condensation of Na mercaptoacetal with diethyl phosphorochloridate also yields IV (60%), $b_{18} = 81-2^\circ$, $n_D^20 = 1.4690$. Reaction of I with CH_3COAc gives unstable $(EtO)_2PO(SCH_2CH(OAc)Cl)$ (V) in quant. yield, which is converted at 100° to III (85%), $b_{18} = 83^\circ$, $n_D^20 = 1.4693$, with some $AcCl$ as volatile product. Treatment of V with 1 mole water gives III (58%). I with isopropenyl acetate gives $(EtO)_2PO(SCH_2COMe)$ (VI) (50%), $b_{18} = 82^\circ$, $n_D^20 = 1.4685$ (ρ -isopropenylhydrazone m. 92-3°), and $AcCl$. Direct condensation of I with Me_2CO also yields VI (50%).

C. A. Finch
aht

1-TAT/NE

2

Notes 4E3d/4E2c(j)

Wolff rearrangement of 1-diazo-3-bromo- ω -phthalimidobutanes. J. Michalský, M. Holík, and A. Podperová (Masaryk Univ., Brno, Czech.). Monatsh. Chem. 90, 814-21 (1959); cf. CA 53, 21876e. The title compds. were rearranged by Ag₂O in MeOH to the corresponding α,β -unsatd. Me ω -phthalimidobutenecarboxylates, which added CH₂N₂ to give 2-pyrazolines. Me 4-phthalimidocrotonate (I) (100 mg.), dil. H₂SO₄, and 5 ml. AcOH were heated 1 hr. at 100°; the soln. was then concd. to small vol. *in vacuo* to give 100% 4-phthalimidocrotonic acid (II), m. 194-6° (AcOH). I (400 mg.) was added to an excess of CH₂N₂ in Et₂O and the mixt. kept 20 hrs. to give 385 mg. Me 4-phthalimidomethyl 2-pyrazoline-5-carboxylate (III), m. 164-6° (with evolution of N) (MeOH). I (8 g.), 50 ml. 37% aq. HCl, and 50 ml. AcOH were heated 2 hrs. at 100°; the mixt. was then evapd. to dryness and the residue recrystd. from H₂O to give crude II which was then added during 10 min. to CH₂N₂ in Et₂O. After 30 min. the soln. was filtered and then kept 24 hrs. to give a ppt. of 3 g. III; concn. of the Et₂O mother liquors gave 3.9 g. Me 3-chloro-4-phthalimidobutyrate (IV), m. 94-6° (MeOH). IV (500 mg.) was hydrolysed with 1:1 37% HCl-AcOH for 1.5 hrs.; evapn. of the mixt. to dryness and recrystn. of the residue from H₂O gave 3-chloro-4-phthalimidobutyric acid, m. 109-70°, which with CH₂N₂ as before gave IV. IV (200 mg.) in 50 ml. MeOH was heated 6 hrs. at 100° with excess freshly pptd. Ag₂O; the mixt. was then decolorized with C, filtered, concd. to 2 ml., and cooled to give I. 2-Bromo-4-phthalimidobutyric acid (4.5 g.) and 50 ml. SOCl₂ were refluxed 2 hrs.; the excess SOCl₂ was then removed *in vacuo* and the residue was taken up in C₆H₆, added dropwise to CH₂N₂ in Et₂O at -10°, and the mixt. kept 12 hrs. at -10° to give 2.0 g. 1-diazo-3-bromo-5-phthalimidopentan-2-one (V), yellow needles, m. 120° (MeOH). Aq. HBr (40%) was added to 500 mg. V in 10 ml. AcOH until the evolution of N

ceased; after 30 min. the mixt. was dild. with 100 ml. H₂O to give 450 mg. 1,3-dibromo-5-phthalimidopentan-2-one, m. 90-7° (MeOH), 200 mg. V with 37% aq. HCl similarly gave 180 mg. 1-chloro-3-bromo-5-phthalimidopentan-2-one, needles, m. 95.5° (MeOH). Freshly pptd. Ag₂O (from 8 g. AgNO₃) suspended in MeOH was added to 8 g. V in 150 ml. freshly distd. MeOH; after the initial violent reaction ceased the mixt. was refluxed 10 hrs., decolorized with C, filtered, concd. and cooled to give 4.8 g. Me 5-phthalimidopent-2-enoate (VI), m. 93-4° (MeOH). VI (100 mg.) in 10 ml. EtOH was reduced with H over 50 mg. 5% Pd-BaSO₄ at room temp. and 1 atm.; the mixt. was then filtered and evapd. to dryness and the residue recrystd. from a little MeOH to give Me 5-phthalimidovalerate (VII), m. 42-3°. Ag₂O (from 4 g. AgNO₃) was added to 10 g. 1-diazo-5-phthalimidopentan-2-one in 150 ml. MeOH and the mixt. heated 5 hrs. at 80° and then worked up as before to give 9 g. VII. VI (2.8 g.) and 1:1 37% aq. HCl were heated 1 hr. at 100°; the mixt. was then evapd. to dryness and the residue recrystd. from H₂O to give 2.5 g. 5-phthalimidopent-2-enoic acid (VIII), m. 202-3° (in a sealed tube). VIII (200 mg.) and excess CH₂N₂ in Et₂O were kept 12 hrs. at room temp.; the mixt. was then filtered and concd. to give 190 mg. Me 4-(2-phthalimidooethyl)-2-pyrazoline-5-carboxylate, m. 118-21° (with evolution of N) (MeOH). The following homologs of these compds. were similarly prep'd. (compd., % yield, m.p., recrystn. medium given): 1-diazo-3-bromo-6-phthalimidohexan-2-one, 82.4, 103-4°, MeOH; 1,3-dibromo-6-phthalimidohexan-2-one, 83.4, 99-102°, MeOH; 1-chloro-3-bromo-6-phthalimidohexan-2-one, 68.3, 111-12°, MeOH; Me 6-phthalimid-2-hexenoate, 55.1, 85-8°, MeOH; Me 6-phthalimidovalerate, 45-6°, MeOH; 6-phthalimid-2-hexenoic acid, 88, 153-5°, H₂O.

M. L. Burstein

Distr: 4E3d/4E2c(j)

6
Index
J. Organo-phosphorus compounds of sulfur and selenium.
KIII. Action of hydrogen sulfide on dialkyl and diaryl phosphorochloridites. New synthesis of dialkyl and diaryl thiophosphites and tetraalkyl thiopyrophosphites. Cz. Kraviecki and J. Michalski (Inst. Technol., Lodz, Poland).
J. Chem. Soc. 1960, 881-6; cf. *CA* 53, 10641h; 56, 10832c.—
Dialkyl phosphorochloridite (0.1 mole) with 0.1 mole tertiary amine in 75 ml. was treated 3 hrs. with H₂S at 5°, the mixt. filtered, and the filtrate distd. to yield dialkyl H thiophosphate (alkyl groups, % yield, b.p./mm., and η_1^H given): Et (I), 83, 75-6°/14, 1.4608; Pr (II), 67, 109°/13, 1.4620; and Bu, 78, 81-3°/3, 1.4608; SO₂Cl₂ (4.5 g.) in 10 ml. C₆H₆ added dropwise to 0.0 g. II in 30 ml. C₆H₆ at 5° and the mixt. stirred 1 hr. gave 5.0 g. (PhO)₂PCl, η_1^H 113-14°, η_1^D 1.4684. H₂S bubbled through 16.1 g. (PhO)₂PCl and 5.6 g. C₆H₅N in 50 ml. C₆H₆ 2.5 hrs., the mixt. filtered, and distd. at 70°/0.001 mm. gave 11.5 g. (PhO)₂PHS, (III), η_1^H 1.5878, d_{4}^{20} 1.2191. SO₂Cl₂ (8.2 g.) in 10 ml. C₆H₆ added to 13.5 g. crude III in 50 ml. C₆H₆ at 0° and the mixt. stirred 1 hr. gave 6.1 g. (PhO)₂PCl, m. 67°. H₂S passed slowly into 20.1 g. ethylene phosphorochloridite and 12.5 g. pyridine in 120 ml. C₆H₆ 2.5 hrs. at 5°, the mixt. filtered, and distd. at 65-65°/0.7 mm. gave 12 g. ethylene H thiophosphate, η_1^H 1.5401, d_4^{20} 1.4003. Similarly was obtained tri-n-butyl H thiophosphate, η_1^H 60°, m. 34°. 4-BrC₆H₅CH₂OH (18.0 g.) and 17.9 g. PhNEt₃ in 75 ml. C₆H₆ added

to 5.6 g. PCl₃ in 25 ml. C₆H₆ at 5°, the mixt. stirred 15 min. then satd. with H₂S 5 hrs. at 5° gave 9.0 g. (4-BrC₆H₄CH₂O)-PCl, m. 84°. Similarly was obtained 60% (4-O₂NC₆H₄CH₂O)₂PCl, m. 135°. H₂S (2500 ml.) bubbled into 31.2 g. (EtO)₂PCl (IV) and 20.2 g. Et₃N in 80 ml. C₆H₆, 1.5 hrs. at 5° gave 10.0 g. I and 7.5 g. [(EtO)₂P]S (V), η_1^H 64-5°. IV (10.2 g.) in 20 ml. C₆H₆ added dropwise to 16.0 g. I and 11.0 g. Et₃N in 80 ml. C₆H₆ at 20° and the mixt. stirred 45 min. gave 19.5 g. V. V (10 g.) with 2 drops Et₃N in 40 ml. C₆H₆ and 1 hr. with H₂S at 10° gave 8.0 g. I. H₂O (0.8 g.) in 100 ml. Et₃O added to 13.4 g. V and stirred 15 min. gave 9.0 g. mixt. of I and (EtO)₂POH. Dry O bubbled through 13.5 g. V in 15 ml. C₆H₆ 2.5 hr. at 70-80° gave 4.5 g. [(EtO)₂P]₂O, η_1^H 80-8°, η_1^D 1.4495. XIV. Reaction of organic diselenides with trialkyl phosphites. J. Michalski and J. Wieczorkowski. *Ibid.* 886-6.—(EtO)₂P (I), (24.9 g.) added dropwise to 64.8 g. bis(diethoxyphosphinyl) diselenide at 50.5° and the mixt. distd. gave 33.5 g. O,O,S-triethyl phosphoroselenolate, η_1^H 39-41°, η_1^D 130-1°, η_1^D 1.4768, and 42.2 g. tetraethyl selenopyrophosphate, η_1^H 87-8°, η_1^D 1.4050. Ph₃Se (39 g.) and 30 g. I heated slowly, then kept at 190-210° 15 min. and distd. gave 22 g. Et₃SePh, η_1^H 85-6°, and 27.4 g. O,O-diethyl Se-Ph phosphoroselenolate, η_1^H 100°, η_1^D 1.5235. J. A. Gilman

Distr: 4E2c(j)/4E3d

(1)
1-BN(BW)
2-JA3(NB)(mag)
1-RBW
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/ Organotrichloro compounds of sulfur and tellurium.
 XV. Reactions of organic thiosulfonates with triethyl phosphites and diethyl phosphites. Jan Michalski, Tadeusz Modro, and J. Wieszczkowski (Inst. Technol., Lodz, Poland). *J. Chem. Soc.* 1940, 1666-70; cf. *C.A.* 34, 14096d.
 $\text{Bu}_2\text{SO}_2\text{Et}$ (I) (27.5 g.) treated with 37.5 g. $(\text{BuO})_2\text{P}$ at 20-5° gave 24 g. $\text{Bu}_2\text{SO}_2\text{OBu}$, b.p. 52-4°, nD₂₀ 1.4444, and 33.7 g. O,O -diethyl S-ethyl phosphorothioate (II), b.p. 57-8°, nD₂₀ 1.4524. Similarly, 38.4 g. I with 33.3 g. $(\text{EtO})_2\text{P}$ gave 13.6 g. mixt. 55% $\text{Bu}_2\text{SO}_2\text{Et}$ and 17% O,O -diethyl phosphorothioate (III), 16.2 g. III, b.p. 115°, nD₂₀ 1.4572, and 2.1 g. $\text{Bu}_2\text{SO}_2\text{Et}$, b.p. 48-50°. $\text{Ph}_2\text{SO}_2\text{Et}$ (IV) (20.3 g.) with 16.4 g. $(\text{EtO})_2\text{P}$ gave 66% IV and 74% $\text{Ph}_2\text{SO}_2\text{Et}$ obtained as an anisotrope. Similarly, IV with $(\text{BuO})_2\text{P}$ gave II and $\text{Ph}_2\text{SO}_2\text{OBu}$ as the anisotrope, b.p. 95-6°. I with $(\text{PhO})_2\text{P}$ gave no reaction. $(\text{EtO})_2\text{P}$ (33.2 g.) added to 25 g. $\text{Ph}_2\text{SO}_2\text{Et}$, b.p. 55°, nD₂₀ 1.4900, 17.6 g. O,O -diethyl S-phenyl phosphorothioate (VI), b.p. 57-8°, nD₂₀ 1.4920, and 2 g. phenylphosphorothioate (VII), b.p. 57-8°, nD₂₀ 1.4920, was added to 3.4 g. Na and 20.7 g. $(\text{EtO})_2\text{POH}$ in 150 ml. C_6H_6 at 25-30°, then the mixt. gave 24.5 g. III. Concentr. of the aq. solns. gave 11.0 g. $\text{Bu}_2\text{SO}_2\text{Na}$ (VIII), identified by conversion to triethyl 2,4-dinitro-Na (VII), identified by conversion to triethyl 2,4-dinitro-SO₂Na, m.p. 20°. Similarly, I with $(\text{BuO})_2\text{PONa}$ gave 50% II and 50% VII, IV with $(\text{EtO})_2\text{PONa}$ gave 71% III, and 25% $\text{Ph}_2\text{SO}_2\text{Na}$ (VIII), identified by conversion to phenyl 2,4-dinitrophenyl sulfide, m.p. 157°, and V with $(\text{EtO})_2\text{PONa}$ gave 50% VI and 50% VIII. $(\text{EtO})_2\text{P}$ (16.4

g.) reduced 2 hrs. with 16.4 g. S-ethyl sodium thiosulfate (IX) in 70 ml. C_6H_6 gave no reaction. Similarly, IX and $(\text{EtO})_2\text{P}$ 2 hrs. at 110-20° gave no reaction. $(\text{EtO})_2\text{PONa}$ (0.15 mole) in 100 ml. EtOH added to 24.6 g. IX in 100 ml. EtOH at 20° gave 3.2 g. III. J. A. Gilen.

BODALSKI, R.; MICHALSKI, J.

Studies on the synthesis of divinylpyridines. Reaction between syn -
collidine and formaldehyde. *Bul chim PAN* 8 no.5:217-218 '60.
(EKA 10:9/10)

1. Department of Organic Chemistry, Technical University, Lodz and
Department of Organic Synthesis, Lodz, Polish Academy of Sciences.
Presented by O. Achmatowicz.

(Divinyl pyridine) (Collidine) (Formaldehyde)

MICHALSKI, J.; WOJACZINSKI, K.; ZAJAC, H.

Reaction between N_2O_4 dioxide of 1,3-di-(2'-pyridyl)-propane and
acetic anhydride. Bul chim PAN 8 no.6:285-289 '60.
(EPAI 10:9/10)

1. Department of Organic Chemistry, Institute of Technology, Lodz.

(Nitrogen oxides) (Pyridinium compounds)
(Propane) (Anhydrides)

MICHALSKI, Jan; SKOWRONSKA, Aleksandra

Organophosphorus compounds of sulfur and selenium. XVI. Dialkyl- and alkylarylthiopyrophosphinates $RR'P(S)OP(0)RR'$. Action of hydrogen sulfide on dialkyl- and alkylarylphosphinic chlorides. Roczn. chemii 34 no. 5: 1381-1385 '60. (EEAI 10:9)

1. Institute of Organic Synthesis, Polish Academy of Science, Lodz, and Department of Organic Chemistry, Institute of Technology, Lodz.

(Sulfur) (Selenium) (Hydrogen sulfide)
(Phosphorus chlorides) (Organic compounds)
(Alkyl groups) (Aryl groups) (Phosphorus)
(Pyrophosphoric acid)

FIZER, Bernard; MICHALSKI, Jan

Organophosphorous compounds with active methylene group. III. Addi-
tion of phosphinylacetic esters and their analogs to α, β -unsaturated
ethylenic derivatives. Roczn. chemii 34 no. 5: 1461-1464 '60.
(EPAI 10:9)

1. Department of Organic Chemistry, Institute of Technology, Lodz.

(Methylene group) (Phosphorus) (Esters)
(Ethylene)

S/081/63/000/00?/056/088
B171/B102

AUTHORS: Michalski, Jan, Zwierzak, Andrzej
TITLE: Preparation of tetraalkyl pyrophosphates
PERIODICAL: Referativnyy zhurnal. Khimiya, no. 2, 1963, 405, abstract
2N45 (Polish patent 45271, Oct. 16, 1961)
TEXT: Tetraalkyl pyrophosphates represented by the formula $R_4P_2O_7$ (I),
where R= alkyl, are prepared by a reaction of dialkyl phosphites R_2HPO_3
(II) with NOCl in the presence of HCl-fixing substances, such as
pyridine (III) or without them. A solution of 1-1.5 mole of NOCl in
 C_6H_6 is added drop by drop at 20-35°C to a solution of 1 mole of II and
1 mole of III in ligroin or in C_6H_6 , vigorously stirred and periodically
water-cooled. The hydrochloride of III is filtered out and the solvent is
then eliminated by vacuum distillation. Very pure I is thus prepared with
a yield of 80-90% in respect to II. I may be produced by the action of
NOCl on II without the use of amine to fix HCl, but in that case the

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3,001,02,002,056,088
P171/E102

Preparation of tetraalkyl ...

yield and the quality of I deteriorate. A 0.275 mole solution of NOCl in 100 ml of C_6H_6 at 25-30°C is poured during 30 min into a solution of 0.25 mole of II ($R = C_2H_5$) and of 0.25 mole of III in 150 ml of ligroin. The hydrochloride of III is separated, the solvents eliminated by vacuum distillation and 30.2 g (83%) of I ($R = C_2H_5$) are obtained. This compound has a boiling point at 88-89°C/ 0.01 mm and $n_{D}^{25} = 1.4179$. In another case, a solution of 0.1 mole of NOCl in 50 ml of C_6H_6 at a temperature $\leq 25^{\circ}\text{C}$ is poured during 20 min into a stirred solution of 0.1 mole of unrefined II ($R = C_6H_5CH_2$) and of 0.1 mole of III in 100 ml of C_6H_6 . The hydrochloride of III is filtered out, C_6H_6 is eliminated in vacuo. The residue is washed with 50 ml of water and 50 ml of a dilute solution of NH_3 until pH=8. After several minutes the oil crystallizes. The product is filtered out, recrystallized and I [$(R = C_6H_5CH_2)_2$, melting point 60-61.5°C)] is obtained with a yield of 75%. (from benzene-cyclohexane)
[Abstracter's note: Complete translation.]

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MICHALSKI, J.; WOJACZYNKI, K.; ZAJAC, H.

On the mechanism of formation of 3-(2'-pyridyl)-pyrrocoline from some
1,3-di-(2'-pyridyl)-propane derivatives. Bul chim PAN 9 no.6:401-404
'61.

1. Department of Organic Chemistry, Technical University, Lodz. Pre-
sented by O. Achmatowicz.

MICHALSKI, J.; PLISZKA, B.

Reactions of dialkoxyoxophosphoranesulphenyl chlorides $(RO)_2P(=O)SCl$ with tetraalkyl esters of phosphorous phosphoric anhydride P_2O_5 . Synthesis of isomeric tetraalkyl thio-pyrophosphates. *Bul chim. PAN* 10 no.6:267-269 '62.

1. Institute of Organic Synthesis, Polish Academy of Sciences, Warsaw, and Department of Organic Chemistry, Technical University, Lodz. Presented by O. Achmatowicz.

45380
S/081/63/000/002/027/088
B166/B138

50630

AUTHORS:

Borecka, Barbara, Kapecka, Teresa, Michalski, Jan

TITLE:

Organophosphorus derivatives of sulfur and selenium.
Part XIX. Addition of diethyl-S-chlorothiophosphates
 $(RO)_2P(O)SCl$ to unsymmetrical ethylenic hydrocarbons

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 2, 1963, 236-257,
abstract 2Zh226 (Roczn. chem., v. 36, no. 1, 1962, 87-95
[Eng.; summaries in Pol. and Russ.])

TEXT: When $(RO)_2P(O)SCl$ (I) are added to $CH_2=CR' R''$ according to
Markovnikov's law $(RO)_2P(O)SCH_2C(Cl)R' R''$ (II) are formed. By chlorinating
II in the presence of water $R' R''CClCH_2SO_2Cl$ (III) were produced and these
were converted into $R' R''CH=CHSO_2Cl$ (IV). In the standard test a stream
of dry propylene is passed into a solution of 0.1 mole I ($R = C_2H_5$) in
 C_6H_6 , stirring and cooling well ($20-30^\circ C$) until the yellow tint of
I disappears; the solvent is distilled off under vacuum and II is

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Organophosphorus derivatives of ...

separated by distillation. The following data are given for II, R, R', R'', yield %, b.p. in °C/mm, nD (temp. in °C): CH₃, H, CH₃, 84, 68/0.01, 1.4840 (20); C₂H₅, H, CH₃ (IIa), 74, 60/0.02, 1.4818 (20); n-C₄H₉, H, CH₃, 58, 90/0.01, 1.4712 (20); CH₃, CH₃, CH₃, 95.5, 67/0.05, 1.4818 (25); C₂H₅, CH₃, CH₃, 73, 73/0.05, 1.4755 (25); n-C₄H₉, CH₃, CH₃, 73.2, 103/0.01, 1.4699 (25); CH₃, H, C₆H₅, 82, 95/0.02, 1.5459 (25); C₂H₅, H, C₆H₅, 85, 105/0.01, 1.5292 (20). Cl₂ is bubbled into a suspension of 56 g IIa in 0.2 l water, stirring thoroughly and cooling (30°C) until saturation is reached, excess chlorine is blown off with air and III (R' = H, "R" = CH₃) (IIIa) are extracted with C₆H₆ (4 x 50 ml), yield 80%, solution of 0.05 moles IIIa in 50 ml C₆H₆, after 5 hrs (~20°C) the sediment is separated, the solvent is removed under vacuum, the residue is dissolved in 100 ml 2 N NaOH, extracted with ether and CH₃CH=CHSO₂NHC₆H₅.

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Organophosphorus derivatives of ...

is separated out by acidifying an aqueous solution with a 10% HCl solution, yield 86.5%, m.p. 94-95°C. The following were produced in the same way: III ($R' = R'' = CH_3$), yield 50%, b.p. 94-95°C/25 mm, n_{D}^{20} 1.4850, $(CH_3)_2C=CHSO_2NHC_6H_5$, yield 67%, m.p. 70-71°C, and III ($R' = H, R'' = C_6H_5$) (IIIb), yield 74%, b.p. 84-85°C/0.1 mm, n_{D}^{21} 1.5635. A solution of 0.1 moles $CH_3(C_6H_5)_2N$ in 50 ml C_6H_6 is added a drop at a time, stirring and cooling (15 - 20°C), to a solution of 0.1 moles IIIb in 150 ml C_6H_6 , the yield of IV ($R' = H, R'' = C_6H_5$) (IVa) is 83%. $C_6H_5CH=CHSO_2NHC_6H_5$ was produced at a yield of 93% from 0.05 moles IVa and 0.1 moles $C_6H_5N_2$ in C_6H_6 (~20°C, 1 hr). For part XVIII see RZhKhim, 1962, 24Zh471.

[Abstracter's note: Complete translation.]

S/081/63/000/002/027/088
B166/B138

Card 3/3

S/081/63/ccc/001/042/061
B144/5166

53630

AUTHORS: Michalaki, Jan, Zwierzak, Andrzej

TITLE: Anhydrides of organophosphorus acids. Part III. Reaction of O-alkyl phosphorous and O,O-diethyl phosphoric anhydrides with alcohols. A new way of obtaining mixed dialkyl phosphites

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 1, 1963, 256, abstract 1Zh238 (Koczn. chem., v. 36, no. 1, 1962, 37-102 [Eng.; summaries in Pol. and Russ.])

TEXT: A method has been developed for synthesizing $RC(R'O)PO$ (I) by alcoholysis of non-purified $(C_2H_5O)_2P(O)(C)(H)OR$ (II) obtained from $(C_2H_5O)_2POCl$ (III) and $RO(O)(H)CNa$ (IV). Hydrolysis of $(RO)_2PO$ by the equimolar quantity of NaOH in 50% alcohol yields IV (R, yield in % and b.p. in °C are given): C_2H_5 , 95, 182-183; C_3H_7 , 98, 191-193; iso- C_3H_7 , 97, 128-130; C_4H_9 , 93, 175-177. 0.25 mole of III is added dropwise in

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the course of 15 min to 0.25 mole ground IV in 100 ml C_6H_6 at $40-50^{\circ}C$; after 30 min ($40-50^{\circ}C$) 0.25 mole of $R'OH$ is gradually added to cool the mixture to $20^{\circ}C$, the mixture is stirred for 1 hr at $40-50^{\circ}C$ and cooled, then 0.25 mole NaOH in 75 ml water is added dropwise, and I is extracted with benzene (R, R' , yield in %, b.p. in $^{\circ}C/mm$ and n_{D}^{20} are given):

C_2H_5, C_4H_9 (Ia), 57, 102-102.5/19, 1.4163; C_2H_5 , iso- C_3H_7 , 31, 40-41/1, 1.4091; C_2H_5 , $C_6H_5CH_2$, 51, 85-86/0.03, 1.4226; C_2H_5 , $CH_2=CHCH_2$, 49, 55-56/1.5, 1.4279; C_2H_5 , C_3H_7 , 51, 51-52/1, 1.4137; C_2H_5 , cyclo- C_6H_{11} (Ib), 49, 52-53/0.005, 1.4472; C_2H_5 , tert- C_4H_9 , 42, 28-29/0.03 (unstable even at $20^{\circ}C$), 1.4149; iso- C_3H_7 , C_4H_9 , 61, 35-35.5/0.02, 1.4164; iso- C_3H_7 , $CH_2=CHCH_2$, 44, 36-37/0.04, 1.4274; C_4H_9 , cyclo- C_6H_{11} , 53, 73-73/0.01, 1.4522; C_4H_9 , $CH_2=CHCH_2$, 48, 48-49/0.02, 1.4332; C_3H_7 , C_4H_9 , 48.5, 39.5-40/0.005, 1.4199. 0.05 mole of II ($R = C_2H_5$) is mixed with 0.05 mole of C_4H_9OH at $20^{\circ}C$ and Ia is separated after 1 hr ($20^{\circ}C$), yield

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~6.5%, b.p. 36-37°C/0.005 mm. 0.075 C₄H₉OH and 0.075 mole of 2,6-lutidine in 10 ml C₆H₆ are added to 0.075 mole of II (R = C₂H₅) in 10 ml C₆H₆ in the course of 5 min; after 1 hr (50°C) and 12 hrs (20°C) 10 ml water is added, which has been acidified with 2 drops of concentrated HCl; Ia is obtained from the benzene layer, yield 50.5%, b.p. 63-64°C/1 mm. Ib is obtained analogously with a yield of 52% from 0.075 mole of II (R = C₂H₅) and 0.075 mole of C₆H₁₁OH in the presence of 0.075 mole of 2,6-lutidine in C₆H₆. For communication II see RZhKhim, 1962, 182h264. [Abstracter's note: Complete translation.]

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MICHALSKI, Jan; MODRO, Tomasz

Derivatives of hypophosphoric acid. Pt. 1. The synthesis
of tetrasalkyl hypophosphates. Rocznik chemii 36 no.3:483-488
'62.

1. Department of Organic Chemistry, Institute of Technology,
Lodz, and Institute of Organic Synthesis, Polish Academy of
Sciences, Lodz.

MICHALSKI, Jan; ZWIERZAK, Andrzej

Derivatives of hypophosphoric acid. Pt. 2. The synthesis
of tetraalkyl dithiohypophosphates. Rocznik chemii 36 no.3:489-495
'62.

1. Department of Organic Chemistry, Institute of Technology,
Lodz.

MICHALSKI, Jan; RATAJCZAK, Aleksander

Organophosphorus compounds of sulfur and selenium. Pt. 21.
Rocznik chemii 36 no.4:775-776 '62.

1. Department of Organic Chemistry, Technical University, Lodz.

MICHALSKI, Jan; RATAJCZAK, Aleksander

Organophosphorus compounds of sulfur and selenium. Pt. 20.
Rocznik chemii 36 no.5:911-919 '62.

1. Department of Organic Chemistry, Institute of Technology,
Lodz.

MICHALSKI, Jan; MUSIEROWICZ, Stanislaw

Organophosphorus derivatives of sulfur and selenium. . t. . 3.
Rocznik chemii 36 no.11:1655-1659 '64.

1. Department of Chemistry, Technical University, Lodz.

BEDNAREK, P.; BOBALSKI, R.; MICHAŁSKI, J.; MUSIEROWICZ, S.

Alkyl-and alkenyl-pyridines. Pt. 8. *Bul chim PAN* 11 no.9; 507-511 '63.

l. Institute of Organic Synthesis, Lodz Branch, Polish Academy of Sciences.

MICHALSKI, J.; MIKOŁAJCZYK, M.; MŁOTKOWSKA, B.; SKOWRONSKA, A.

Formation of tetraalkylthionopyrophosphates through isomerization
of their thiolo-isomers. *Bul chim PA* 11 no.12:695-697 '63.

1. Department of Organic Chemistry, Technical University, Lodz
and Institute of Organic Synthesis, Polish Academy of Sciences.
Presented by J. Michalski.

MICHALSKI, Jan; TULIMOWSKI, Zdzislaw

Organophosphorus compounds of sulfur and selenium. Pt.24.
Rocznik chemii 36 no.12:1781-1785 '63.

1. Department of Organic Chemistry, Technical University,
Lodz.

MICHALSKI, Jan; PLISZKA-KRAWIECKA, Bozena; SKOWRONSKA, Aleksandra

Organophosphorus derivatives of sulfur and selenium. Pt.26.
Rocznik chemii 37 no.11:1479-1487 '63.

1. Institute of Organic Synthesis, Polish Academy of Sciences, Lodz.

MARUSZEWSKA-WIECZORKOWSKA, Elzbieta; MICHALSKI, Jan

Anhydrides of organophosphorus acids. Pt. 5. Rocznik chemii 37 no.
12:1579-1588 '63.

1. Department of Organic Chemistry, Technical University, Lodz.

MILWAUKEE, WI, Jan. 1978, Canada

In the afternoon of January 22, 1978, a telephone call was received from the FBI office in Milwaukee, Wisconsin, concerning a recent telephone call made by a man who identified himself as "John".

The telephone number of the man was given as 414-273-1234.

BOCHWIC, Boleslaw; MICHALSKI, Jan

Osman Achmatowicz. Nauka polska 12 no.4:62-65 Jl-46 1966.

1. Member of Polish Academy of Sciences, Warsaw (fo: Michalski).

MICHALSKI, Jerry

27
X Absorption of carbon dioxide by activated carbon
depends on temperature, air flow, concentration
of CO₂, and physical condition of the
material. 24557, Mech. Engg. Div., Bureau of Mines,
Prepared, No. 5, 1954 (English and German summaries).
NB—Absorption of air by activated carbon is notably reduced by
moisture. The max. amt. of CO₂ absorbed is but slightly
diminished and not affected by the presence of air. J. B.

J. B.
J. B.

Phthalyl diethylpyrophosphonates. Jerzy Michalski and Aleksandra Skowrońska (Poznań, Poland). *Russian Chem. J.*, 21, 211-215 (1977). Summary. - Diethylphthalyl pyrophosphate (1) was synthesized by the method of K. H. Schmidbauer et al. (1973), i.e. 1.13 g of 1,130 diisopropyl benzene was added to 1.13 g of 1,130 diisopropyl benzene in 8% H_2NCO and 1.4 g of 1,130 diisopropyl benzene in 8% H_2NCO . The reaction mixture was heated at 100°C for 1 h, cooled, and the product was isolated by column chromatography on alumina. Yield: 1.0 g (70%). The infrared spectrum of compound 1 showed absorption bands at 1710, 1600, 1450, 1380, 1280, 1150, 1050, 950, 850, 750, 650, and 550 cm⁻¹.

APPROVED FOR RELEASE: 03/13/2001

CIA-RDP86-00513R001033810019-5"

MICHALSKI, K.

MICHALSKI, K. Development of a base for the raw plant materials of the food industry during the period of 1956-1960, p. 22⁸

Vol. 10, no. 6, June, 1956
PRZEMYSŁ SPOŁYWCZY
TECHNOLOGY
Warsaw, Poland

So. East Accession Vol. 6, no. 2, Feb. 1957

MICHALSKI, F.

Protection of sugar beets from aphids. p. 60.

GAZETA CUKROWNICZA. (Stowarzyszenia Naukowo-Technicznego Inżynierów i Techników
Przemysłu Rolnego i Spożywczego i Centralny Zarząd Przemysłu Cukrowniczego)
Warszawa, Poland. Vol. 61, no. 2, Feb. 1959

Monthly List of East European Agriculture (EELA) LC, Vol. 1, no. 1, July 1959

Uncl.

POLAND/Chemical Technology - Chemical Products and Their
Application - Water Treatment, Sewage Water.

H.

Abs Jour : Ref Zhar - Khimiya, N. 9, 1958, 29214

Author : Michalski, K.

Inst :

Title : The Analysis of Polluted Surface Waters.

Orig Pub : Gaz-Woda-Techn Sanit, 31, No 6, 217-218 (1957, (in Polish))

Abstract : N. abstract.

Card 1/1

MICHALSKI, K.

Examination of contaminated water and bacteriology. p. 221.

GAZ, WODA I TECHNIKA SANITARNA. (Stowarzyszenie Naukowo-Techniczne
Inżynierów i Techników Sanitarnych, Ogrzewnictwa i Gazownictwa)
Warszawa, Poland. Vol 32, no. 6, June 1958.

Monthly list of East European Accession (AI) LC, Vol. 9, no. 2, Feb. 1960

Uncl.

SWIRSKA, Alicja; MICHALSKI, Kazimierz

Furan derivatives of 3-amino-2-oxazolidinone. Acta pol. pharm. 19
no.5:459-460 '62.

1. Z Instytutu Farmaceutycznego w Warszawie.
(OXAZOLES) (FURANS)

WESOLOWSKI, Jan; GASLAR, Stanislaw; MICHALSKI, Kazimierz; STEPNIEWSKI, Waldemar

Measurement of alph-ray radioactivity in the atmosphere over some
localities in the Low Silesia district. Nukleonika 6 no.12:801-812
'61.

1. Uniwersytet Wrocławski we Wrocławiu, Katedra Fizyki Doswiadczonej.
Akademia Medyczna we Wrocławiu, Katedra Fizyki.

MICHALSKI, K.

The use of polyesters for the construction of motorcar bodies.

p. 360 (Technika Motoryzacyjna) Vol. 7, no. 10, Oct. 1957, Warszawa, Poland

SO: MONTHLY INDEX OF EAST EUROPEAN ACCESSIONS (EEAI) LC, VOL. 7, NO. 1, JAN. 1958

POLAND/Chemical Technology - Synthetic Polymers. Plastics.

H-29

Abs Jour : Ref Zhur - Khimiya, № 24, 1958, 83531

Author : Michalski, K.

Inst :

Title : The Polyester Glass Plastics as a Construction Material.

Orig Pub : Techn. literaturychn., 1958, 3, № 1, 8-12.

Abstract : A review of the properties and the application of glass plastics reinforced with glass fibers and glass mats.

Card 1/1

- 53 -

MICHALSKI, K., PETRYKOWSKI, A.

The use of plastics in the construction of machinery. (Conclusion)
p. 434

Mechanik Warszawa, Poland Vol. 32, no. 8, Aug. 1959

Monthly List of East European Accessions (EEAI) LC, Vol. 9, no. 2,
Feb. 1960
Uncl.

MICHALSKI, Konrad, Mgr.inz.

New synthetic materials and their use in plain bearings. Techn
motor 11 no.8:274-278 Ag '61.

MICHALSKI, Konrad, mgr inz.

Molding-pressing of parts from thermohardening plastics. Mechanik
34 no.8:411-413 '61.

1. PRIS, Warszawa.

MICHALSKI, Konrad, mgr. inz.

"Coatings from plastics" by Zbigniew Kowalski. Reviewed by
Konrad Michalski. Mechanik 35 no.5:304 My '62.

MICHALSKI, Leszek; CHROMINSKI, Andrzej

Bioautographic analysis of growth regulators in hazel (*Corylus avellanea L.*) germinating pollen. Nauki matem przyrod Torun no.6:65-71 '66.

1. Zaklad Fizjologii Roslin, Uniwersytet im. M. Kopernika, Torun, i Pracownia Fizjologii Roslin, Osrodek Badawczy Biologii Stosowanej Uniwersytetu im. M. Kopernika w Toruniu w Piwincach, pow Torun.

MICHALSKI, Leszek

Changes in plant growth regulators in the generative organs of
yellow lupine in different stages of development. Nauki matem
przyrod Torun no.6:73-81 '60.

1. Zaklad Fizjologii Roslin, Uniwersytet im. M. Kopernika, Torun.

MICHALSKI, Leszek

Electrophoresis of plant regulators in agar plates. Nauki matem
przyrod Torun no.6:89-95 '60.

1. Zaklad Fizjologii Roslin, Uniwersytet im. M. Kopernika,
Torun.

MICHNIIEWICZ, M.; MICHALSKI, L.

Changes in the level of growth regulators in leaves and reproductive organs of the radish *Raphanus sativus* L. in its different stages of development. *Acta a. robotanica* 9 no.2:99-111 '60.

1. Zaklad Fizjologii Roslin, Uniwersytet Mikolaja Kopernika, Torun.

"APPROVED FOR RELEASE: 03/13/2001

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I, I, I.

Re: [REDACTED] [REDACTED] [REDACTED]
[REDACTED], [REDACTED], [REDACTED]

[REDACTED] [REDACTED] [REDACTED] [REDACTED]
[REDACTED], [REDACTED].

APPROVED FOR RELEASE: 03/13/2001

CIA-RDP86-00513R001033810019-5"

RECORDED

"Revised list of British agents in continental Europe, 1954-1955,"
INTERCOUNTRIES, Vol. 1A, No. 1, August 1957, p. 32, bld.

CC: Monthly list of East German assessors ("M.", "M.", "M.", etc.),
March 1955, bld.

ELLIOTT, L.

RECORDED IN THE NAME OF L. ELLIOTT, JR.,
BORN JUNE 19, 1923, RESIDENCE, 1000 N. 10TH,
TAMPA, FLORIDA.

RECORDED IN THE NAME OF A. M. ELLIOTT, JR.,
MARCH 1965, INC.

MICHAELI, L.

"Inkfactory I" - 1970, May 15, 1970, Tel Aviv, Israel
"Inkfactory II" - 1970, May 15, 1970, Tel Aviv, Israel

See: "Inkfactory I" - 1970, May 15, 1970, Tel Aviv, Israel
"Inkfactory II" - 1970, May 15, 1970, Tel Aviv, Israel

"APPROVED FOR RELEASE: 03/13/2001

CIA-RDP86-00513R001033810019-5

MINAMI, L.

CONFIDENTIAL - SOURCE INFORMATION
LAWYER, VOL. 1, NO. 1, AND READING, NO. 4, 1960
CIA INTERNAL CONFIDENTIAL SOURCE INFORMATION
MAY 1960, 1960.

APPROVED FOR RELEASE: 03/13/2001

CIA-RDP86-00513R001033810019-5"

Michalski, Ludivich

POLAND/Optics - Physical Optics

K-5

Abs Jour : Referat Zhur - Fizika, No 5, 1957, 12980

Author : Michalski Ludivich

Inst :

Title : Optical Measurements of Surface Temperatures of Solids
Below 700°.

Orig Pub : Pomiary, automat., kontrola, 1956, 2, No 9, 342-346

Abstract : No abstract.

Card 1/1

MICHALSKI

POLAND/Atomic and Molecular Physics - Heat

D-6

Abs Jour : Ref Zhur - Fizika, No 4, 1959, No 5445

Author : Michalski Ludwik

Inst : -

Title : Measurement of the Temperature of Metals in the Liquid State

Orig Pub : Pomiary, automat., kontrola, 1958, 4, No 5-6, 239-243

Abstract : Survey article on the measuring methods and devices, read at the Conference on Precision Mechanics and Measurement Technology in Warsaw, June 1958.

Crd : 1/1

MICHALSKI, Ludwik, dr inz.

Temperature measurements of the surface of rotating cylinders.
Pomiary 8 no.9:407-410 S '62.

MICHALSKI, Ludwik

Work of an electric furnace in case of impressed frequency
of the coupling of the heating power. Elektryka Lods no.10:
81-95 '62.

1. Katedra Grzejnictwa Elektrycznego, Politechnika, Lods.

MICHALSKI, Ludwik, dr., inz.

Measurement of the surface temperature of rotating cylinders. Ciegł
masz przepływ no. 39/40:61-73. '62

1. Katedra Grzejnicza Elektrycznego, Politechnika, Łódź.

MICHALSKI, Ludwik, dr inż.

Precise temperature control of electric resistance furnaces.
Przegl mech 22 no.3:81-82 10 F '63.

l. Politechnika, Łódź.

MICHAŁ DŁI, M.

Floor: From 1945 to the mid-1950s (continued)

PRZEGIAD (Przegiad. M. i Wybrane Materiały Komunistyczne) - monthly, Poland,
Vol. 10, no. 4, June 1958.

Monthly List of East European Assessments (EEA), Vol. 1, No. 1, April 1958.

Uncd.

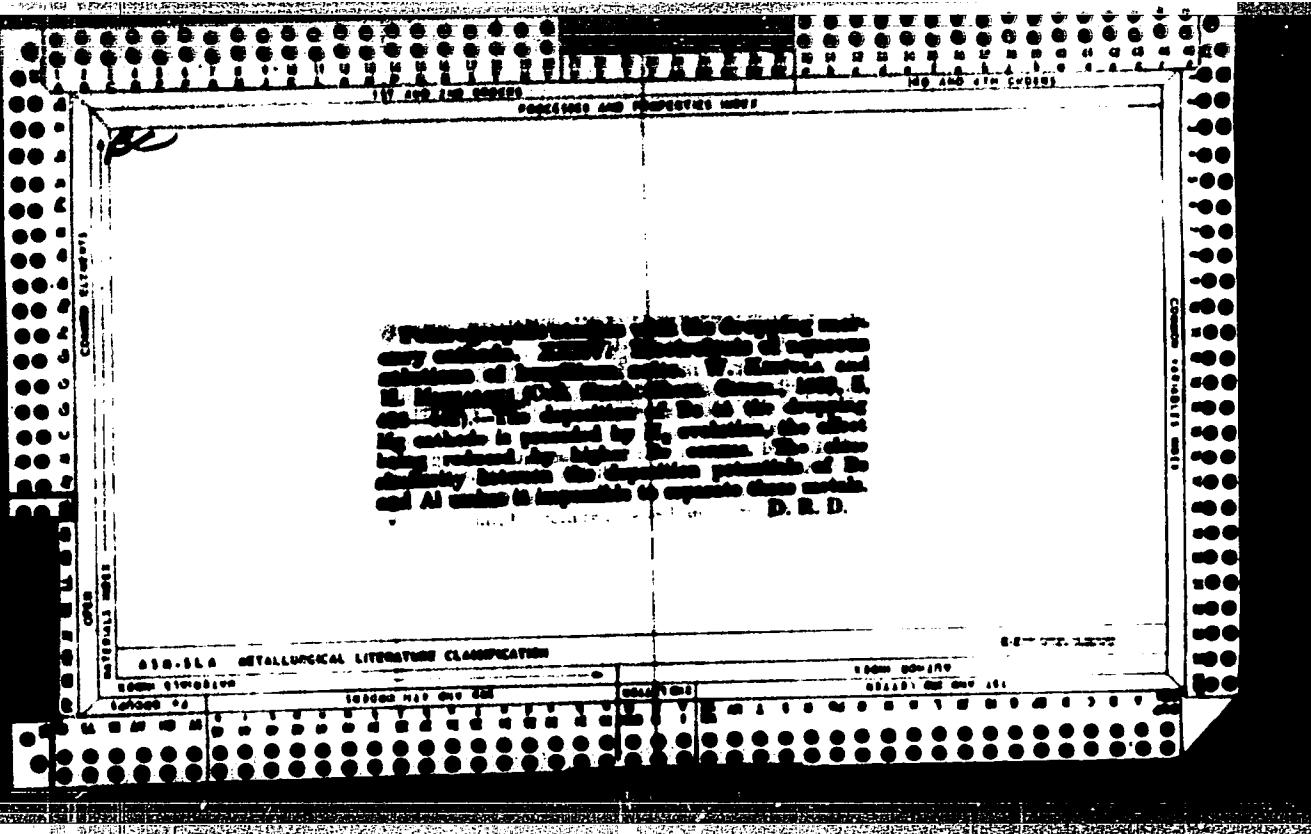
MICHALSKI, M.

Untapped sources of coal economy. p.267
(PRZEWODNIK KOLEJOWY DRUGI, Vol. 8, No. 12, Dec. 1956, Warsaw, Poland)

SO: Monthly List of East European Accessions (EEA⁴) LC, Vol. 6, No.9, Sept. 1957, Uncl.

"APPROVED FOR RELEASE: 03/13/2001

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6C

PROCESSES AND PROPERTIES INDEX

Polymerization reactions. IV. Influence of limiting currents. Influence of oxygen on the limiting currents for different conditions. W. KERSTILA and M. MESSALA (Rec. Chem., 1936, 16, 536-541).—Evaluation of the limiting current is observed in the electrolysis of 0.001*N*-KCl saturated with O_2 , as compared with solutions saturated with H_2 . The reverse effect is obtained with 0.001*N*-HCl. This is ascribed to the reactions $O_2 + 2H_2O \rightarrow H_2O_2 + 2OH^-$; $H_2O_2 + 2H_2O \rightarrow 2H_2O + 2OH^-$; $OH^- + H^+ \rightarrow H_2O$.

R. T.

ASA-1A METALLURGICAL LITERATURE CLASSIFICATION

SEARCHED _____

SERIALIZED _____

INDEXED _____

FILED _____

SEARCHED _____

SERIALIZED _____

INDEXED _____

FILED _____

P.T.H.

Chemistry & Chemical Technology
7

323

535.337 545.82 681.2

Kosciula W. and Michalek M. Schematic Arrangements of the "Interrupted Arc" as a Source of Emission in Spectral Analysis.

"Schematy urządzek „luku przerwanego” jako źródła emisji w analizie spektralnej" Przemyśl Chemistry No 5, 1950, pp 282—288, 5 figs

Advantages of the "interrupted arc" are emphasized in comparison with other methods of exciting the emission of characteristic radiation in spectral analysis. Testing and improving the method applied by Pfeilsticker led to the construction of an installation nourished only by alternating current (needing no current switches) by means of which 100 separate discharges per sec between the electrodes were obtained. The advantages of this installation consist in greater intensity of discharges, increasing the sensitivity of detecting elements with characteristic spark spectra, such as arsenium, phosphorus, carbon etc. There is also a possibility of quantitative spectral analysis. Schematic drawings of installations are included

3

CA

The "interrupted arc" as a source of light in spectral analysis. W. Kemula and M. Michalek. *Z. Anal Chem.* 6(29), 282-8(1950).—The various systems of the "interrupted arc" are described. The wire diagram described by Pfeilsticker (*Z. Elektrochem.* 43, 719(1937); *Z. Metallkunde* 30, 211(1938)) is improved upon to give greater intensity and stability of discharge. The possibility of detecting the spectra of As, P, and C are thus increased.
Frank Govee

MICHALSKI, M

The excitation of sonic and ultrasonic oscillations in electrolytes. B. Klemenc, M. Michalski, and J. Wosniakowski. Zeszyty Naukowe Politechniki Warszawskiej, Seria 1, Wydzial Chemiczny, Rocznik 6, 10-14 (1958) (In English).—Hg electrodes in N H_2SO_4 were vibrating under the action of elec. n.c., 0.5-2 amp., a few v., and a frequency of 50-20000 Hertz. The mech. frequency was close to the elec. frequency, especially at lower values. H_2O_2 is produced but at lower frequencies.

TYSAROWSKI, W.; MICHAISKI, M.; KLECKOWSKA, M.

Polarographic method of determination of oxygen combined with hemoglobin and of blood oxygen capacity. Acta physiol. polon. 3 Suppl. 3: 253-254 1952. (CML 24:1)

1. Of the Department of Biochemistry (Head--Bagdasarian, M.D.) of the Institute of Tuberculosis in Warsaw.

TYSAROWSKI, W.; MICHALSKI, M.; KLECZOWSKA, H.

Polarographic method of determination of oxygen in oxyhemoglobin.
Polski tygod. lek. 7 no. 45:1453-1461 10 Nov 1952. (CLML 24:1)

1. Of the Department of Biochemistry of the Institute of Tuberculosis
(Director--Prof. Janina Misiewicz, M.D.)

MICHALSKI, Maksymilian, inz.

Colorful painting of workshops and production installations.
Przegl kolej mechan 13 no.8:239-241 Ag '61.

MICHALSKI, Maksymilian, inz.

Estrich gypsum a new building material. Przegl kolej drog 14 no.5:26 29
Maj '62

1. Dyrekcja Okregowa Kolei Państwowych, Szczecin.

MICHALSKI, Ryszard, mgr inz.

Properties of frictionally welded joints. Przegl spaw 16 no.9
221-223 Str 64

1. Welding Institute, Gliwice.

MICHALSKI, Tadeusz, mgr inż.; KUBIAK, Ignacy, mgr inż.

Mechanization of welding works by resistance welding. 1981.
spaw. 17 min. 21-24. Ap. 1-5.

L. Institute, Warsaw, Poland.

MOLKE, Waldemar; MICHALSKI, Stanislaw

Experimental application of dextract in guinea pigs and consecutive renal and hepatic anatomo-pathological changes.
Par. polska 7 no.3:273-278 July-Sept 56.

1. Z II Kliniki Chirurgicznej A.M. w Gdansku, Kierownik:
prof. dr. K. Debicki, i z Zakladu Anat. Pat. A.M. w Gdansku
Kierownik: prof. dr. W. Czarnocki, Gdansk, Lipowa 3.
(LIVER, effect of drugs on,
dextract, histopathol. changes in guinea pigs (Pol))
(KIDNEYS, effect of drugs on,
same)
(DEXTRAN, effects,
on kidneys & liver, histopathol. changes in guinea pigs (Pol))

MOLKE, Waldemar; MICHALSKI, Stanislaw

Hepatic changes in guinea pigs and rabbits after the administration
of periston. Pat. polska 12 no.4:473-478 '61.

1. Z II Kliniki Chirurgicznej AMG Kierownik: prof. dr K. Debicki
Z Zakladu Anatomii Patologicznej AMG Kierownik: prof. dr W. Czarnocki.
(LIVER pharmacol) (POLYVINYL PYRROLIDONE pharmacol)

MOLKE, Waldemar; MICHALSKI, Stanislaw; ZAWISTOWSKI, Leonard

Periston as a plasma substitute. Pol. przegl. chir. 35
no.10/11:1148-1149 '63.

1. Z II Kliniki Chirurgicznej AM w Gdansku Kierownik: prof.
dr K. Debicki.

(POLYVINYL PYROLIDONE) (LIVER)
(PHARMACOLOGY) (RNA)
(LIPID METABOLISM)

Michalski T.

Michalski T. "The Accuracy and Certainty of Location of Point by the Method of Manifold Resection"

(Wielokladosc i wiernosc wyznaczenia punktu metodą wielokąta resekcji).

Przeglada Geodezyjny, No 1, 1949, pp. 26-30, 3 figs.

The author proves by numerical example that the criterions of characteristics of accuracy of manifold resection usually applied (mean errors and ellipse of mean error) may in certain instances be entirely ineffective. It is possible, namely, in the case of observation under unfavourable frame a geometrical point of view, to vary the values of observation within limits many times in excess of the limits of mean errors, and to obtain, in consequence of re-balancing, co-ordinates which are vastly different from the co-ordinates originally computed, and yet characterised as to accuracy of a very small mean error in point location. In this connection, the author recommends the exercise of caution in the evaluation of the accuracy measurements on the basis of mean errors, particularly when comparing the results of various triangulations. When examining the triangulation of a border rier, the author urges that it is desirable to concentrate the attention rather on the arrangement of the determining elements, since in the event of lack of effective elements of control the accuracy of point location is ineffective.

SC: Polish Technical Abstracts - No. 2, 1951

PERIODICALS

Michalski T.

Michalski T., Eng. "The Checking of Computations"
(Kontrola obliczen). Przegląd Wojskowy. No. 3-4, 1960, pp. 75-78

The checking of computations is a necessary supplement to mathematical undertakings. Different methods of checking the arithmetic operation; special control formulas which have it as their object to check the calculations made by means of generally applied fundamental formulae. By this method we can check the calculations of azimuths, sides (of polygons), increases of coordinates and so on. It would be very difficult to utilize special tables of check functions for different angle values which occur in the checking formulae.

SC: Polish Technical Abstracts - No. 2, 1961

MICHALSKI, T.

"Weights of determining elements in a two-direction intersection". p 219
(GEOODEZJA I KARTOGRAFIA, Vol. 1, No. 4, 1952. Warszawa, Poland)

SO: Monthly List of East European Accessions. (EVAL). LC Vol. 4, No. 4,
Apr 1956. ^Uncl.

MICHAIISKI, T.

"Most Advantageous Case of Resection", t. 33. (GPODZIA I ZAPTOGRAFIA,
Vol. 3, No. 1, 1st4, Warszawa, Poland)

SO: Monthly List of East European Accessions, (EEAI), IC, Vol. 4,
No. 1, Jan. 1st, Incl.

MICHALSKI, T.

Survey of the development in organizing geodetic works and some conclusions; from a rigidly fixed team to an elastic production brigade. Pt. 1. (To be contd.) p. 131. Vol. 12, no. 4, Apr. 1956
Warszawa

PRZEGLAD GEODEZYJNY

SOURCE: East European Accession List (EEAL) Library of Congress
Vol. 5, no. 8, August 1956

MICHALSKI, T.

Survey of the development in organizing geodetic works and some conclusions; from a rigidly fixed team to an elastic production brigade. Pt. 2. p. 171. Vol. 12. no. 5, May 1956 Warssawa

PRZEGLAD GEODEZYJNY

SOURCE: East European Acession List (EEAL) Library of Congress
Vol. 5, no. 8, August 1956

MICHALSKI, T.

Contribution to the analysis of intersection. Tr. from the Polish. p. -5.
(Geodeticky A Kartograficky Obzor, Vol. 3, No. 3. Mar 1957, Praha, Czechoslovakia)

SO: Monthly List of East European Accessions (EEAI) LC, Vol 6, No. 8, Aug 1957, Uncl

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P/029/60/000/004/002/002
A076/A126

26086

3,4000

X

AUTHOR: Michalski, Tadeusz, Master of Engineering

TITLE: A method for direct marking of free terms during compensation of multiple intersection

PERIODICAL: Przeglad Geodezyjny, no. 4, 1960, 122 - 123

TEXT: During geodetic calculations values obtained should be free of mathematical errors, otherwise the marked elements are misleading and can not be regarded as basic data for further work. The above condition necessitates that all values must be re-checked during calculations, especially in such calculations where the greatest possibility of mathematical errors occurs, i.e. compensation of multiple intersections. A number of control methods are known, among them the method presented by Master of Engineering Jerzy Gazdzicki, published in the periodical "Geodezja i Kartografia" 1957, no. 4, 243, which is however, rather complicated and time consuming. The author of this article presents his own method according to which, direct marking of free terms during compensation of multiple intersections is calculated and re-checked much faster. It is seen from the following equation

$$l_1 = v'_1 - (K_1 \pm 200^{\circ}) \quad (3)$$

Card 1/5

A method for direct marking of... 26086

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A076/A126 X

between orientated direction K_1 and the approximate azimuth v'_1 a relation exists $v'_1 = K_1 + l_1$, illustrated geometrically in Fig. 1. If the free term l_1 does not equal zero, the oriented direction passes by the approximated point P' , of the intersected point P and is distant by the magnitude of

$$h = \frac{l_1}{Q} \cdot s_1 \quad (5)$$

intersecting parallel to the axis cut in point P_x , and parallel to the axis of ordinates in point P_y . It is easy to note that the position of the two points is defined, as abscissa of point P_x results in $\Delta y'_1 \cdot \operatorname{ctg} K_1$, and ordinate of point P_y equals $\Delta x'_1 \cdot \operatorname{tg} K_1$. It is possible to determine the distance of $P_x P = D_x$ and $P_y P = D_y$, namely

$$\left. \begin{aligned} D_x &= \Delta y'_1 \cdot \operatorname{ctg} K_1 - \Delta x'_1 \\ D_y &= \Delta y'_1 - \Delta x'_1 \cdot \operatorname{tg} K_1 \end{aligned} \right\}$$

Between the sectors D_x and D_y and the sector h , the following dependence exists

$$n = D_x \cdot \sin K_1, \quad h = D_y \cdot \cos K_1$$

by substituting them in Equation 5, the following is obtained

Card 2/5

A method for direct marking of...

26086

P/029/60/000/004/002/002
A076/A126

$$l_1 = \frac{g}{s_1} \cdot \sin K_1 \cdot Dx \quad l_1 = \frac{g}{s_1} \cdot \cos K_1 \cdot Dy$$

and by transforming the above for inverse directions, i.e. from intersecting point to reflecting point P_1 , the following may be written

$$\left. \begin{aligned} l_1 &= -\frac{g}{s_1} \cdot \sin (K_1 \pm 200^\circ) \cdot Dx \\ l_1 &= -\frac{g}{s_1} \cdot \cos (K_1 \pm 200^\circ) \cdot Dy \end{aligned} \right\}$$

Due to the fact that the free terms l_1 are small magnitudes, it is possible to substitute in the above equations in place of values of oriented directions ($K_1 \pm 200^\circ$) the values of approximated azimuth v_1 . It is easy to note that coefficients at Dx and Dy are actually direction coefficients of a_1 and b_1 defined by Equation 4, but used also in transformed form as

$$a = +\frac{g}{s} \cdot \sin v; \quad b = -\frac{g}{s} \cdot \cos v$$

After taking into consideration the above dependence the following workable formula is obtained

$$l_1 = a_1 \cdot Dx_1; \quad l_1 = b_1 \cdot Dy_1 \quad (6)$$

Card 3/5

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